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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/540,087

01/20/2006

Ronan Diffily

05-551

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04/14/2008

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EXAMINER

GOLUB, MARCIA A

ART UNIT

PAPER NUMBER

2828

MAIL DATE

DELIVERY MODE

04/14/2008

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/540,087	<b>Applicant(s)</b> DIFFILY ET AL.	
	<b>Examiner</b> MARCIA A. GOLUB	<b>Art Unit</b> 2828	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 17 December 2007.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) 11 and 12 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-9 and 13-20 is/are rejected.
- 7) ☒ Claim(s) 10 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)             | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)    | Paper No(s)/Mail Date. _____  |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____   | 6) <input type="checkbox"/> Other: _____                                    |

## **DETAILED ACTION**

### ***Information Disclosure Statement***

Applicants are reminded of their duty to disclose all information relevant to the patentability of the claims, pursuant CFR 37 §1.56, in order to obtain a valid patent. The relevant information includes, for example, prior art documents listed an international search report issued in a European patent application 1 432 087.

### ***Election/Restrictions***

Applicant's election without traverse of Group I (claims 1-11, 13-20) in the reply filed on 12/17/07 is acknowledged. Claim 11 recites a laser system comprising an inverter, the inverter is not disclosed in the first embodiment. Since the inverter circuit is part of the second embodiment non-elected by the applicant, claim 11 is withdrawn from consideration. The restriction requirement is deemed proper and is therefore made final.

During a telephone conversation with Jeffrey Armstrong a provisional election was made without traverse to prosecute the invention of a laser system, claims 1-10, 13-16. Affirmation of this election must be made by applicant in replying to this Office action. Method claims 17-20 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

**Claims 17-20** are rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential steps, such omission amounting to a gap between the steps. See MPEP § 2172.01. There are no positive steps recited in the claims to make them proper method claims.

**Claims 6 and 7** are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The claims recite a limitation "ITU grid"; ITU grid is defined by government standards that can change overtime, thereby changing the scope of the claim.

**Claim 7** is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

A broad range or limitation together with a narrow range or limitation that falls within the broad range or limitation (in the same claim) is considered indefinite, since the resulting claim does not clearly set forth the metes and bounds of the patent protection desired. See MPEP § 2173.05(c). In the present instance, the claim recites the broad recitation "at least 4 frequency points", and the claim also recites "at least 16 frequency points", which is the narrower statement of the range/limitation.

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

**Claims 1-9 and 13-16** are rejected under 35 U.S.C. 102(b) as being anticipated by Sarlet et al. ("Control of widely tunable SSG-DBR lasers for dense wavelength division multiplexing"), hereinafter Sarlet.

Fig 6 of Sarlet discloses a laser system comprising:

1. "a multisection diode laser [SSG-DBR laser] with a plurality of sections that are drivable by control inputs to select a desired output mode from among a plurality of available output modes;

a wavelength locker [P1, P2] locking the selected output mode to a target frequency, where the wavelength locker has a characteristic response period and there are at least two target frequencies in each response period of the wavelength locker;

and a controller [PC] operable to sweep the diode laser in a pre-determined frequency direction through a series of frequency points by asserting a pre-calibrated series of sets of control input values to the sections of the diode laser and using the wavelength locker to lock to each of the frequency points, (see IV. Feedback Control-

Experiments, A. Static Operation)

wherein the frequency points are obtained from cavity modes in a plurality of different supermodes, (Fig 3)

and the sets of control input values are pre-determined to take account of thermal transients that are known to arise from jumps in the output modes that occur when sweeping through the pre-calibrated series of sets of control input values in the pre-determined frequency direction.” See Figs 4 and 5. Also, this recitation is not further limiting since no additional structure is recited.

2. “wherein the controller is further operable to sweep the diode laser in the opposite frequency direction by asserting a further pre-calibrated series of sets of control input values to the sections of the diode laser, wherein the further pre-calibrated sets of control input values take account of thermal transients that are known to arise from jumps in the output modes that occur when sweeping through the further pre-calibrated series of sets of control input values in the opposite frequency direction.” The controller is capable of sweeping the laser in the opposite direction.

3. “wherein at least one of the sets of control input values has control input values that deviate from their thermal equilibrium values by amounts dependent on the difference between the sum of its own control input values and those of the set of the preceding frequency point.” This recitation is not further limiting since no additional structure is recited.

4. “wherein each set of control input values defines an operating point in drive current space, and drive current space is subdivided into cells defined by the output modes of the laser, wherein at least one of the sets of control input values defines an operating point that is offset from the central region of its cell in a direction of a predicted transient thermal shift in the cell when arrived at by jumping from the preceding operating point.” See Figs 4 and 5. Also, this recitation is not further limiting since no additional structure is recited.

5. “wherein when a set of control input values defines an output mode in a different supermode from the output mode of the preceding set of control input values, the set of control input values is pre-determined so that the jump to that output mode is made to

occur at a frequency midway between adjacent minima and maxima of the response of the wavelength locker.” The controller described in the reference is capable of being operated in the described manner. Also, this recitation is not further limiting since no additional structure is recited.

8. “wherein the frequency points are spaced apart by a constant frequency increment.” (See Fig 2, also the laser was tested using 100-GHz ITU grid channels)

9. “further comprising a control circuit operable to output a correction signal for driving the diode laser that is dependent on the difference between a measured value output from the wavelength locker and a desired value output from the controller.” See Fig 6. The control circuit described in the reference is capable of being operated in the described manner.

13. “wherein the control input values for each target frequency are stored in a look up table.” (see IV. Feedback Control-Experiments, A. Static Operation)

14. “wherein the control input values for each target frequency are stored in a look up table (see IV. Feedback Control-Experiments, A. Static Operation)

and variable gain enhancement is used so as to normalise the wavelength locker slope, by incorporation of variable gain potentiometer values in the look up table.” This recitation is not further limiting since no additional structure is recited.

15. “where an offset is applied to normalise a desired locking value from the controller.” The controller described in the reference is capable of being operated in the described manner.

16. “where an offset is applied to normalise a desired locking value from the controller and wherein the offset is stored as part of the lookup table of the laser for each target frequency.” The controller described in the reference is capable of being operated in the described manner.

### ***Allowable Subject Matter***

**Claim 10** is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject

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matter: the prior art of record does not disclose or suggests to combine the laser controlling system as described above with a control circuit that outputs a correction signal and the wavelength locker has a response with a frequency derivative which alternates in sign, and the control circuit is configured so that the correction signal has a magnitude independent of the sign of the difference.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

### ***Contact Info***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to MARCIA A. GOLUB whose telephone number is (571)272-8602. The examiner can normally be reached on M-F 9-6 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Minsun Harvey can be reached on 571-272-1835. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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